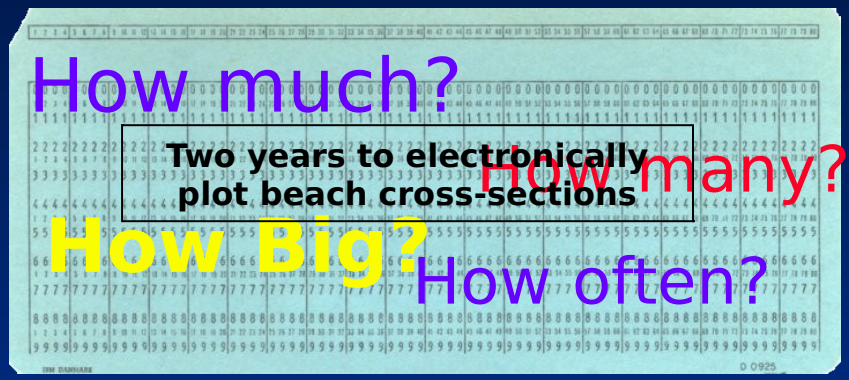
An Overall Vision of the Corps as Data Developers & Users

William A. Birkemeier
Coastal Field Data Collection Program
Coastal and Hydraulics Laboratory

Subtitle: from punch cards to Google Earth – what's next?

Data entry 1975



Data handling 2009

We answer these questions with Data

if we have it, or can find it, or can collect it, or can model it

Tom Richardson addressed the CERB meeting at Duck, NC in 2002

- *Data influences all phases of all projects*
- *We need data for projects & regionally*
- *Physical and environmental parameters*
- *The Corps will never collect all the data we require*

Appropriate then, appropriate now.

The flow of data

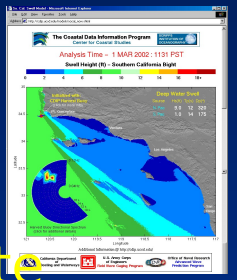
Collection

Make Decisions

The flow of data

Wave buoy

Collection



Wave Forecast

Make Decisions

Sales go down – why?

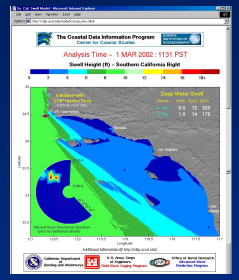
It’s more complicated, more variables, model inadequate
Now dependent on someone else to provide data

The flow of data

Data User

- Discover
- Acquire
- Re-format
- Quality control
- Integrate w/other data
- Analyze/Explore
- Create Product
- Interpret
- Make Decisions

Data Collectors don't do this, users do!

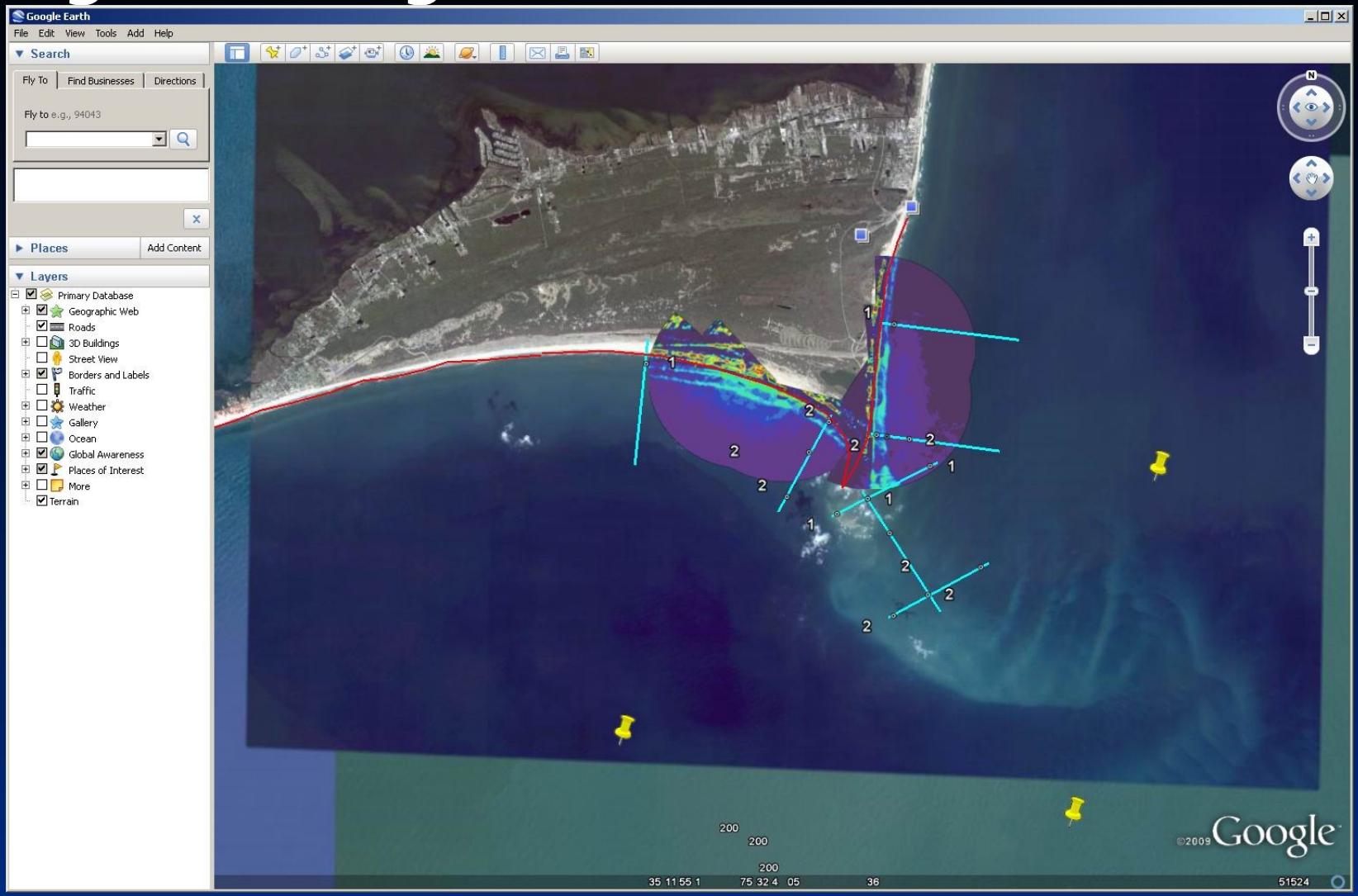

The Coastal Data Information Program
Center for Coastal Studies
Analysis Time – 1 MAR 2002 : 1131 PST
Swell Height (ft) – Southern California Bight
Wave Forecast

Data Collector

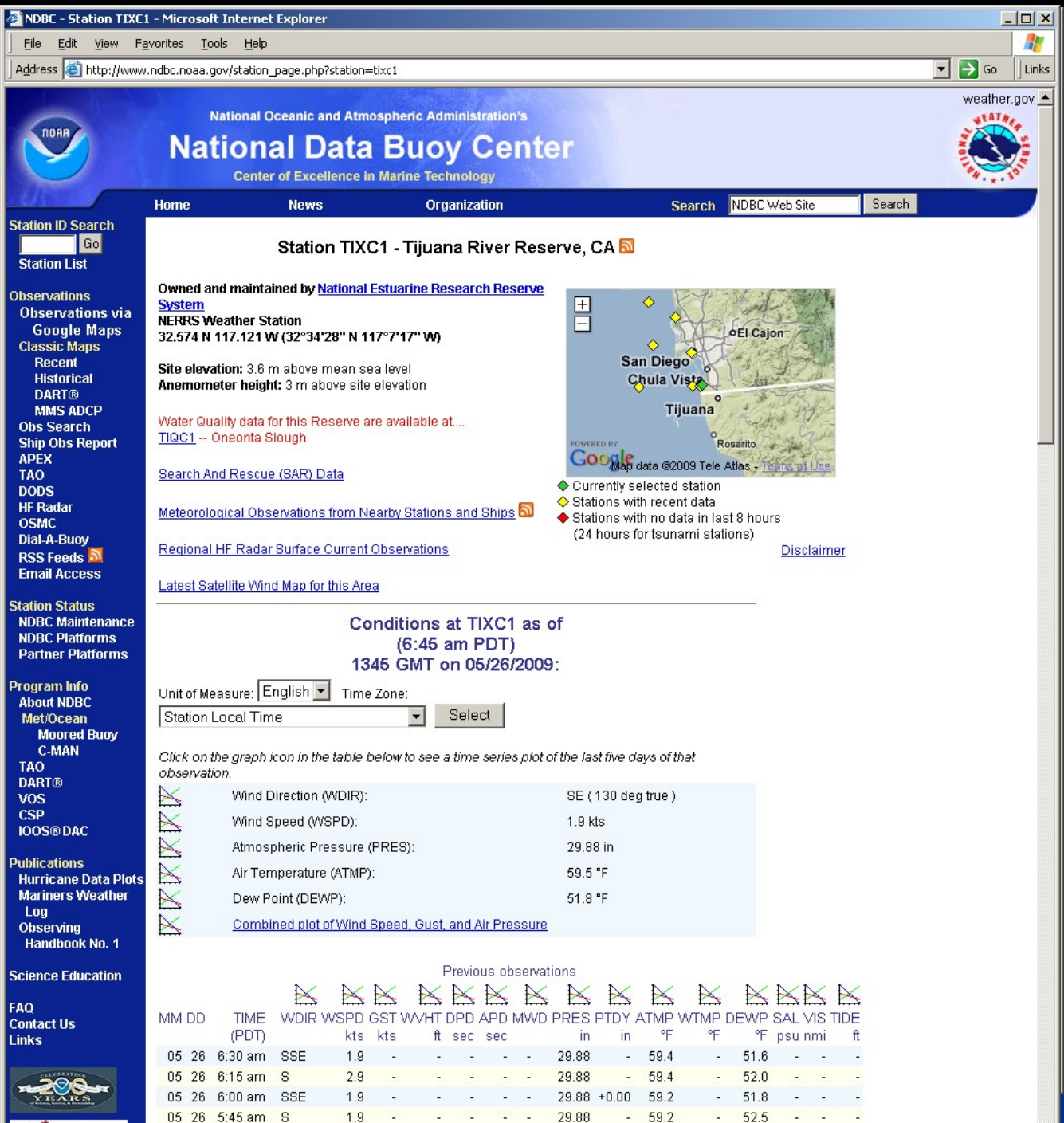
- Collection
- Quality control
- Format
- Distribute
- Archive

Wave buoy

Google & Google Earth: the Future Defined?



Intuitive – allows spatial discovery of data – fast – customizable – links different data sets and People use it!


NDBC - Station TIXC1 - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address http://www.ndbc.noaa.gov/station_page.php?station=tixc1
Go Links
National Oceanic and Atmospheric Administration's
National Data Buoy Center
Center of Excellence in Marine Technology
weather.gov
Home News Organization Search NDBC Web Site Search
Station ID Search Go
Station List
Observations
Observations via Google Maps
Classic Maps
Recent
Historical
DART®
MMS ADCP
Obs Search
Ship Obs Report
APEX
TAO
DODS
HF Radar
OSMC
Dial-A-Buoy
RSS Feeds
Email Access
Station Status
NDBC Maintenance
NDBC Platforms
Partner Platforms
Program Info
About NDBC
Met/Ocean
Moored Buoy
C-MAN
TAO
DART®
VOS
CSP
IOOS® DAC
Publications
Hurricane Data Plots
Mariners Weather Log
Observing Handbook No. 1
Science Education
FAQ
Contact Us
Links
Station TIXC1 - Tijuana River Reserve, CA
Owned and maintained by National Estuarine Research Reserve System
NERRS Weather Station
32.574 N 117.121 W (32°34'28" N 117°7'17" W)
Site elevation: 3.6 m above mean sea level
Anemometer height: 3 m above site elevation
Water Quality data for this Reserve are available at....
TIQC1 -- Oneonta Slough
Search And Rescue (SAR) Data
Meteorological Observations from Nearby Stations and Ships
Regional HF Radar Surface Current Observations
Latest Satellite Wind Map for this Area
El Cajon
San Diego
Chula Vista
Tijuana
Rosarito
Map data ©2009 Tele Atlas - Terms of Use
Currently selected station
Stations with recent data
Stations with no data in last 8 hours
(24 hours for tsunami stations)
Disclaimer
Conditions at TIXC1 as of (6:45 am PDT) 1345 GMT on 05/26/2009:
Unit of Measure: English Time Zone:
Station Local Time Select
Click on the graph icon in the table below to see a time series plot of the last five days of that observation.
Wind Direction (WDIR): SE (130 deg true)
Wind Speed (WSPD): 1.9 kts
Atmospheric Pressure (PRES): 29.88 in
Air Temperature (ATMP): 59.5 °F
Dew Point (DEWP): 51.8 °F
Combined plot of Wind Speed, Gust, and Air Pressure
Previous observations
MM DD TIME (PDT) WDIR WSPD kts GST kts WVHT ft DPD sec APD sec MWD PRES in PTDY in ATMP °F WTMP °F DEWP °F SAL psu VIS nmi TIDE ft
05 26 6:30 am SSE 1.9 - - - - - 29.88 - 59.4 - 51.6 - - -
05 26 6:15 am S 2.9 - - - - - 29.88 - 59.4 - 52.0 - - -
05 26 6:00 am SSE 1.9 - - - - - 29.88 +0.00 59.2 - 51.8 - - -
05 26 5:45 am S 1.9 - - - - - 29.88 - 59.2 - 52.5 - - -

Website

NDBC:

- Consolidates data
- Performs QA/QC
- Serves it worldwide
- Provides access

NDBC does not:

- Use/analyze data
- Develop products
- Long-term Archive
- Include all data

Have to go elsewhere

OpenIOOS.org | Retrospectives - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://www.openioos.org/stormlist/coastalflooding.html

OPENIOOS.ORG
AN INTEGRATED OCEAN OBSERVING SYSTEM TESTBED

WHERE STANDARDS ENABLE INNOVATION
HOME | ABOUT OPENIOOS | CONTACT US
POWERED BY SURA SCOOP IN SUPPORT OF IOOS

REAL-TIME DATA | 24/7 PREDICTIONS | RETROSPECTIVES | MODELING TEST BED | GUIDES & RESOURCES

- Retrospectives
- Katrina (water-level & waves)
- Patriots Day Storm

CONTRIBUTORS

- SURA/SCOOP
- UNC/RENCI
- NOAA / NOS
- BIO
- GoMOOS
- NWS

THIS SITE DEVELOPED BY

SURA SCOOP

WITH FUNDING FROM

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

OFFICE OF NAVAL RESEARCH

IOOS INTEGRATED OCEAN OBSERVING SYSTEM

Prototype Decision Tool for Coastal Flooding and Erosion

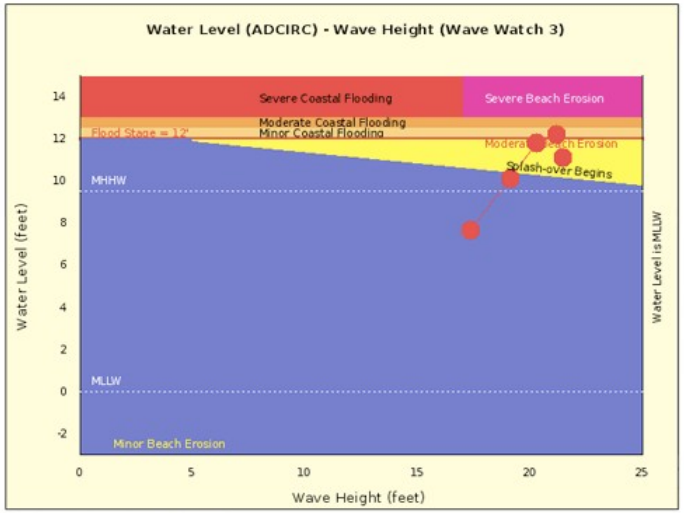
GoMOOS has worked with meteorologists at the National Weather Service in Gray, Maine to prototype a decision-support tool that predicts coastal storm damage. The tool uses forecasts of water level and waves to predict coastal damage near Saco, Maine. A prototype was recently adapted to Scituate, Massachusetts and is being validated with storm data from the weather service and local emergency management community. The tool is running in real-time and can be accessed here:
Coastal Flooding and Erosion Forecast

A Patriots Day retrospective from 2007 shows the tool in action for Saco, ME:

An empirical relationship exists between storm tide, waves and coastal flooding or splash-over damage which allow us to predict when flooding and splash-over events (such as beach erosion) might occur based on forecast water level (tide height) and wave height data.

- The red line (horizontal) represents the point at which the water level is at flood stage (FS).
- An orange line, (nearly vertical), represents when beach erosion will occur.
- A yellow line (slight diagonal left to right) represents when splash over begins.

When the nomgram is in motion, a real-time indicator moves through the 48 hour forecast as a series of red circles. The leading circle of the indicator represents the most recent reading, and the trailing circles are previous readings (in 1 hour increments).

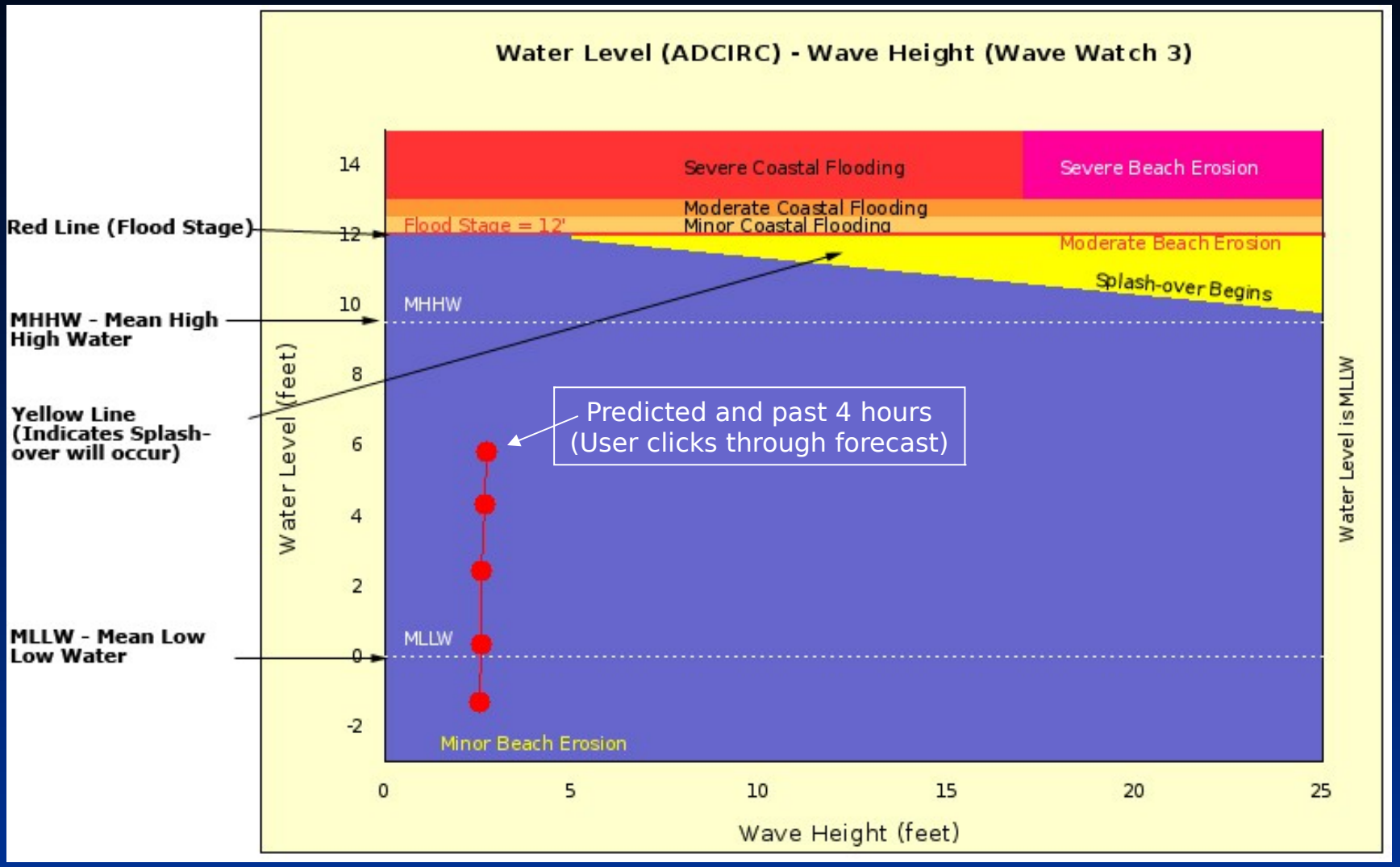


<< >> ▶ ■ FASTER SLOWER

04/15 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00
04/16 00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00
04/16 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00
04/17 00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00
UTC (EDT + 4 hours)

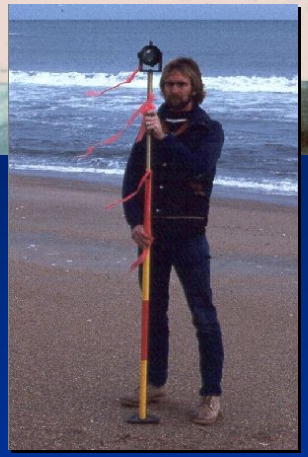
Internet

Prototype Decision Tool for Coastal Flooding & Erosion

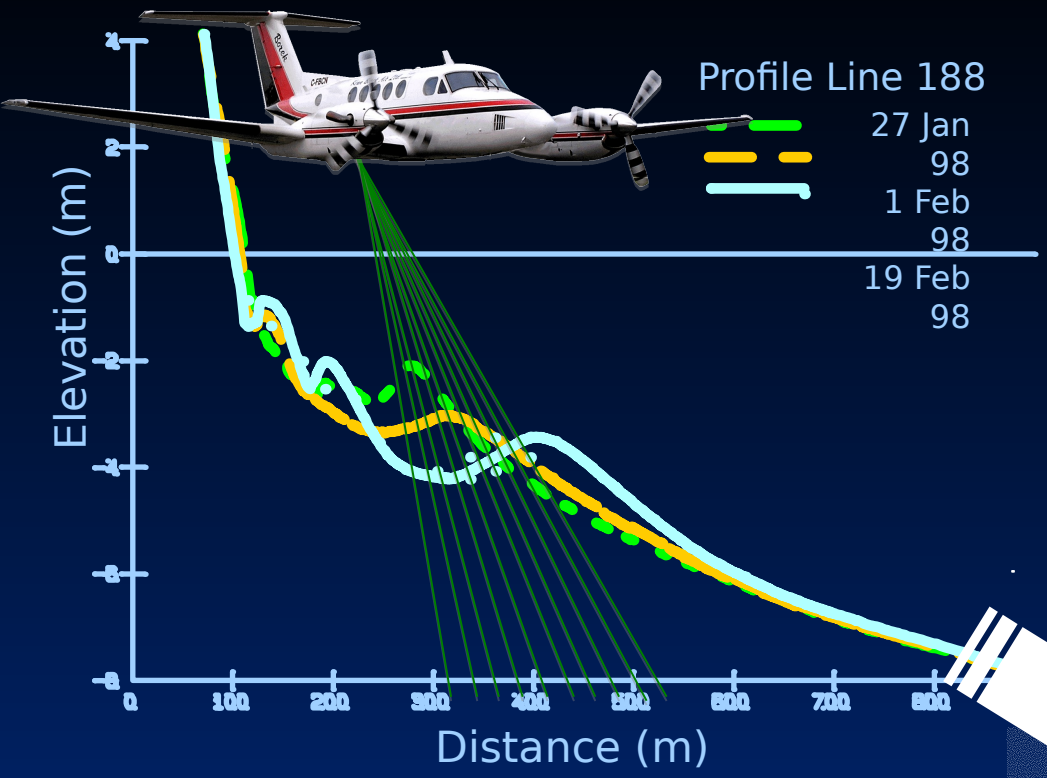


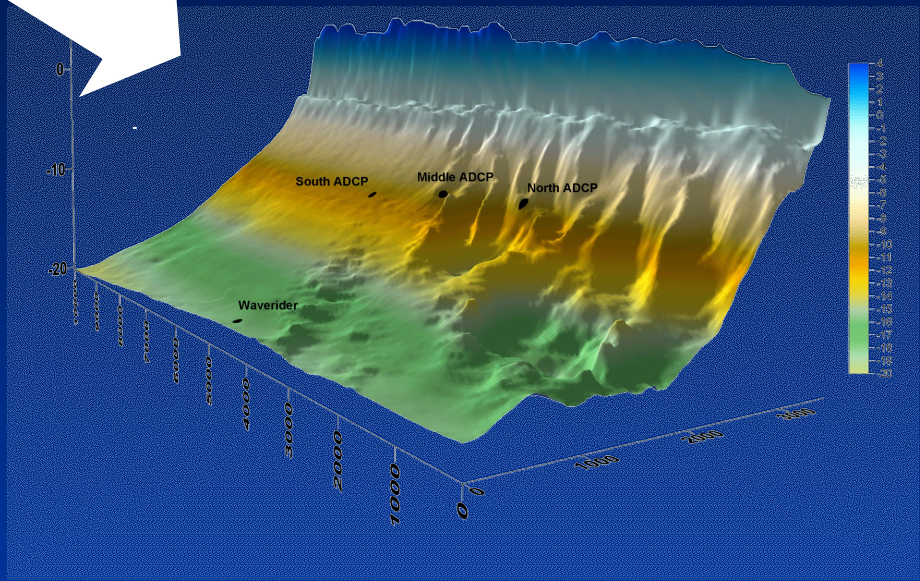
To Predict the Future - Look Back

The evolution of the beach profile (abridged version)



The evolution of the beach profile

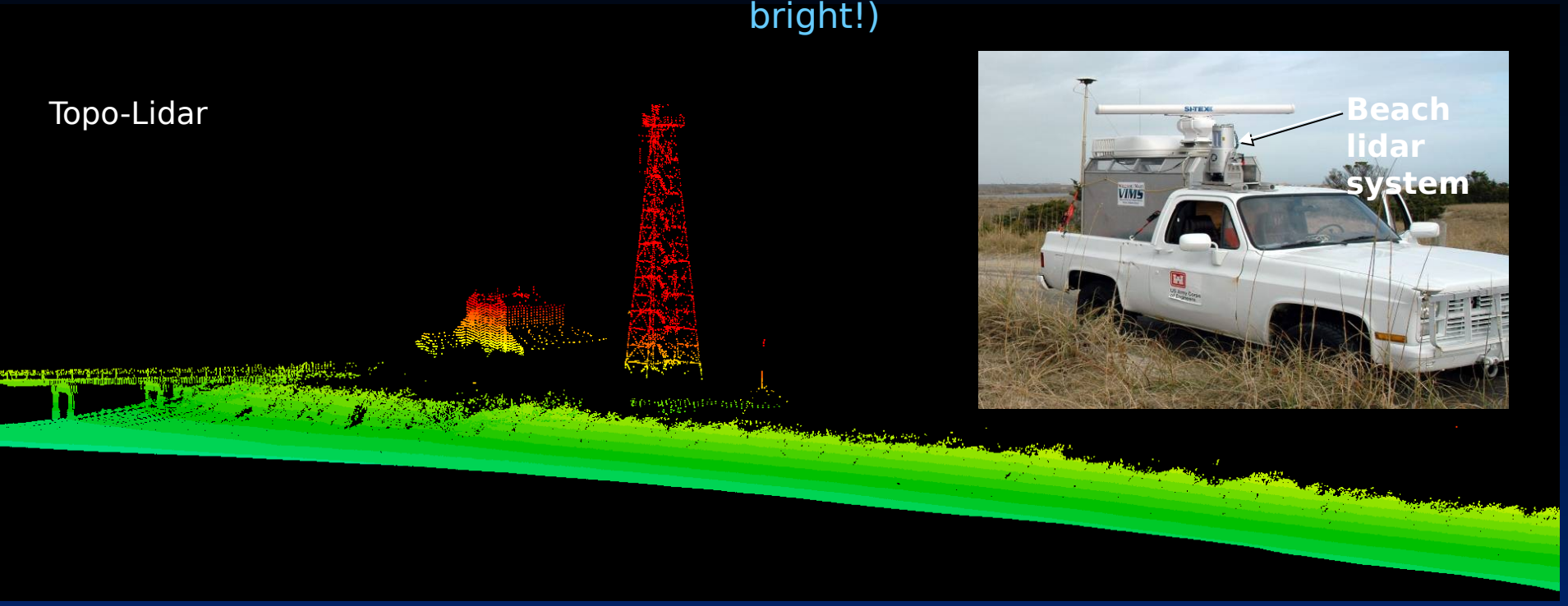




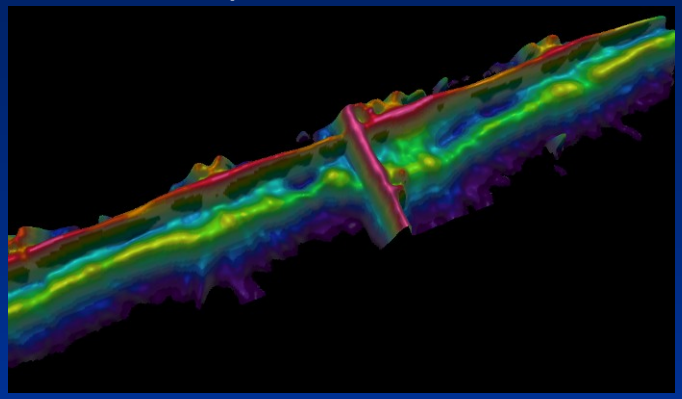
Coastal Lidar And Radar Imaging System (CLARIS)

Integrated, mobile system for a seamless map of beach topography and nearshore bathymetry – (The future looks bright!)

Topo-Lidar



Time-exposure for sandbars



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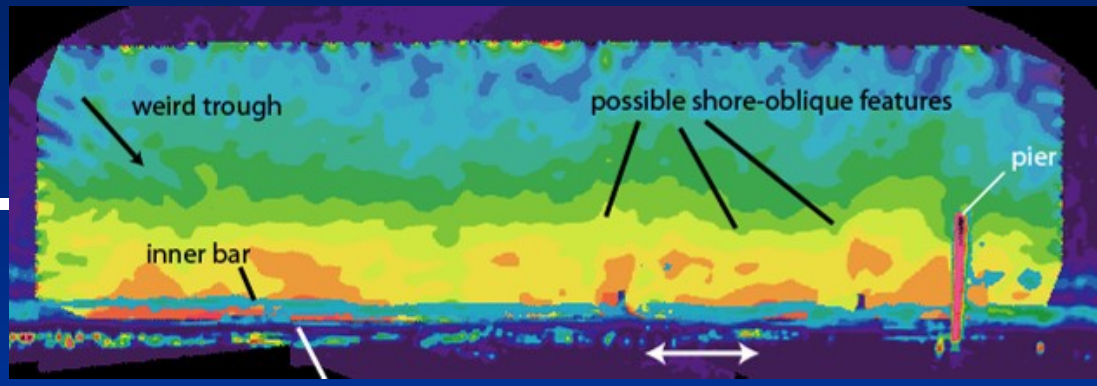
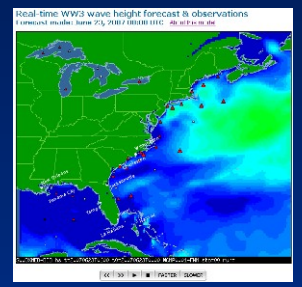
Bathymetry from wave field inversion



…and in the Future

Data User

- Spatial Discovery "Deep" web
- "User friendly" Acquire
- ~~Re-format~~
- Quality control
- Integrate w/other data customizable
- Analyze/Explore standard tools
- Integrated Products animated, customized
- Interpret Scenario testing
- Better Decisions



Wave Forecast

Data Collector

- Collection New Sensors
- Quality control
- Standard Formats, including GIS
- More Powerful Servers
- Established Archives

Wave buoy

- **High resolution remote sensing**
- **Smaller sensors,**
- **Better batteries**

Everything improves....

Data Truisms

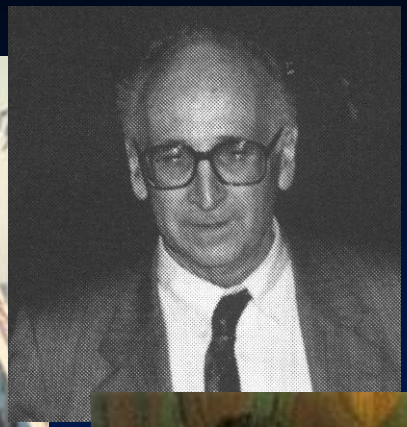
- **Collect once, use many times**
  - Real-time data for operations, becomes long-term climate & extreme-event record
  - Make it available; it will be used
  - Standardize new data, then add historic
- **Users don’t care who collected it, they just want it**
  - To identify users, turn off the data – they’ll let you know!
- **Data are time-sensitive, You only get one chance**
  - Data gaps are permanent
  - Extreme events often missing - critical
  - Start collecting now the data we will need tomorrow
- **24/7 Field Data Collection requires:**
  - Operational attitude: standard procedures
  - Staff dedication, expertise
  - Funding (equipment, logistic support, staffing)
  - Organizational commitment

The Coastal Data Information Program
Integrative Oceanography Division
SCRIPPS Institution of Oceanography
CDBW
USACE

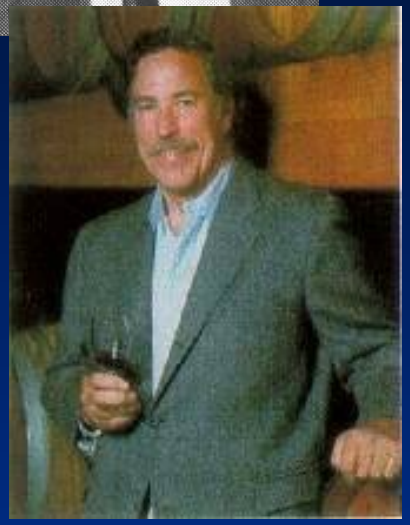
Celebrating 35 years in 2010

vision & commitment

Dick Seymour



Robert Wiegel



Orville Magoon

Ron Flick (CDBW)

George Domurat

Founding Fathers of CDIP

Early Players

Actions for the Corps

- Define data requirements
- Establish Priorities
- Assign Resources
- Take advantage of Partnerships
- Be Forward Thinking

The End
http://chl.erdc.usace.army.mil/cfdc